

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A data transfer driver for a data storage device including recording media having one or more recording surfaces, and one or more ~~data~~-transducer heads positionable relative to the recording surfaces by an ~~a head position~~-actuator ~~structure~~-operating within a head position servo loop, the data transfer driver comprising:

5 one or more head interfaces, each head interface electrically connected to a transducer head for controlling the transducer head for data read and/or write operations;
and

 a mode controller electrically connected to each head interface ~~interface~~, for
controlling the operation of each head interface for selectively reading data from at least
10 one recording surface via at least one transducer head while writing final servo patterns
~~data~~-to at least one recording surface via at least one transducer head.

2. (Cancelled)

3. (Currently amended) The data transfer driver of claim 1, ~~1~~-wherein the mode controller controls the operation of the head interfaces based on configuration information, ~~wherein the configuration information includes data transfer mode and transducer head selection~~ information.

4. (Cancelled)

5. (Currently amended) The data transfer driver of claim 3, ~~1~~ further comprising a control interface connected to the mode controller, the control interface for receiving configuration information wherein the mode controller controls the operation of the head interfaces based on the configuration information includes head selection and data transfer mode information.

6. (Currently amended) The data transfer driver of claim 1, ~~1~~ wherein each head interface comprises:

a read circuit for controlling the corresponding transducer head to read data from a recording surface, and

a write circuit for controlling the corresponding transducer head to write data to a recording surface.

7-29. (Cancelled)

30. (Currently amended) A disk drive comprising:

a recording media having one or more recording surfaces; ~~surfaces~~,

one or more data-transducer heads; ~~heads~~,

an a head position actuator structure for positioning the transducer heads relative to the recording surfaces, operating within a head position servo loop;

a preamplifier comprising:

one or more head interfaces, each head interface electrically connected to a transducer head for controlling the transducer head for data read and/or write operations; and

10 a mode controller electrically connected to each head interface ~~and responsive to the servo controller~~, for controlling the operation of each head interface based on configuration information for selectively reading data from at least one recording surface via at least one transducer head while writing final servo patterns data to at least another recording surface via at least one transducer head; and

15 a drive controller ~~configured for controlling the head position-actuator structure to~~ position the transducer heads relative to the recording surfaces, and for providing the configuration information to the mode controller for selectively reading data from at least one recording surface via at least one transducer head while writing final servo patterns data to at least another recording surface via at least one transducer head.

31. (Cancelled)

32. (Currently amended) The disk drive of claim 30, ~~30~~ wherein the configuration information includes head selection and data transfer mode ~~and transducer head selection~~ information.

33. (Cancelled)

34. (Currently amended) The disk drive of claim 30, ~~30~~ wherein the ~~preamplifier~~
further comprises a control interface connected to the mode controller, the control
interface for receiving configuration information is a serial word ~~from the drive controller~~
wherein the mode controller controls the operation of the head interfaces based on the
5 configuration information.

35. (Currently amended) The disk drive of claim 30, ~~30~~ wherein each head
interface comprises:
a read circuit for controlling the corresponding transducer head to read data from
a recording surface, and
5 a write circuit for controlling the corresponding transducer head to write data to a
recording surface.

36. (Currently amended) The disk drive of claim 30, wherein the mode controller
further controls the operation of the head interfaces based on the configuration
information for writing data to a recording surface via a selected transducer head while
reading data from the recording surface via the selected ~~that same~~ transducer head.

37-39. (Cancelled)

40. (Currently amended) A data transfer driver for a data storage device including
recording media having one or more recording surfaces, and one or more ~~data~~ transducer

heads positionable relative to the recording surfaces by ~~an a head position-actuator structure~~ operating within a head position servo loop, the data transfer driver comprising:

5 one or more head interfaces, each head interface electrically connected to a transducer head for controlling the transducer head for data read and/or write operations; and

 a mode controller electrically connected to each head ~~interface~~ interface, for controlling the operation of each head interface for selectively reading data from at least one recording surface while simultaneously writing data to a plurality of ~~data~~-recording surfaces.

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41. (Currently amended) A disk drive comprising:

a recording media having one or more recording ~~surfaces~~ surfaces;

one or more ~~data~~-transducer heads ~~heads~~;

~~an a head position-actuator structure~~ for positioning the transducer heads relative to the recording surfaces, operating within a head position servo loop;

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a preamplifier comprising:

 one or more head interfaces, each head interface electrically connected to a transducer head for controlling the transducer head for data read and/or write operations; and

10 a mode controller electrically connected to each head interface ~~and responsive to the servo controller~~, for controlling the operation of each head interface based on configuration information for selectively reading data from at least one

recording surface via at least one transducer head while simultaneously writing data to a plurality of ~~data~~-recording surfaces via a plurality of transducer heads; and

15 a drive controller ~~configured~~ for controlling the ~~head position-actuator structure~~ to position the transducer heads relative to the recording surfaces, and for providing the configuration information to the mode controller.

42. (Currently amended) A data transfer driver for a data storage device including recording media having one or more recording surfaces, and one or more ~~data~~-transducer heads positionable relative to the recording surfaces by an ~~a head position-actuator structure~~ operating within a head position servo loop, the data transfer driver comprising:

5 one or more head interfaces, each head interface electrically connected to a transducer head for controlling the transducer head for data read and/or write operations; and

 a mode controller electrically connected to each head interface, wherein the mode controller controls the operation of the head interfaces based on configuration information including:

a read mode, wherein the mode controller controls the operation of the head interfaces for selectively reading data via at least one transducer head;

a write mode, wherein the mode controller controls the operation of the head interfaces for selectively writing data via at least one transducer head;

15 a servo write ~~servo write~~-mode, wherein the mode controller controls the operation of the head interfaces for selectively writing data via a plurality of transducer heads; and

a read-while-write (RWW) mode, wherein the mode controller controls the operation of the head interfaces for selectively reading data from at least one recording surface via at least one transducer head while writing data to at least one recording surface via at least one transducer head.

43. (Currently amended) A disk drive comprising:

a recording media having one or more recording ~~surfaces;~~surfaces,

one or more ~~data-transducer~~ heads;~~heads~~,

~~an a head position-actuator structure~~ for positioning the transducer heads relative to the recording surfaces, operating within a head position servo loop;

a preamplifier comprising:

one or more head interfaces, each head interface electrically connected to a transducer head for controlling the transducer head for data read and/or write operations; and

a mode controller electrically connected to each head interface ~~and responsive to the servo controller~~, for controlling the operation of each head interface based on configuration information for selectively reading data from at least one recording surface via at least one transducer head while writing data to at least one recording surface via at least one transducer head; and

a drive controller ~~configured for controlling the head position-actuator structure to~~ position the transducer heads relative to the recording surfaces, and for providing the configuration information to the preamplifier for selectively reading data from at least

one recording surface via at least one transducer head while writing data to at least one recording surface via at least one transducer ~~head; head,~~

20 wherein the configuration information includes head selection and data transfer mode ~~and transducer head selection~~ information comprising:

a read mode, wherein the mode controller controls the operation of the head interfaces for selectively reading data via at least one transducer head;

a write mode, wherein the mode controller controls the operation of the
25 head interfaces for selectively writing data via at least one transducer head;

a servo write ~~servo write~~ mode, wherein the mode controller controls the operation of the head interfaces for selectively writing data via a plurality of transducer heads; and

a read-while-write (RWW) mode, wherein the mode controller controls
30 the operation of the head interfaces for selectively reading data from at least one recording surface via at least one transducer head while writing data to at least one recording surface via at least one transducer head.

44. (Currently amended) A data transfer driver for a data storage device including recording media having one or more recording surfaces, and one or more ~~data~~-transducer heads positionable relative to the recording surfaces by an ~~a head position~~-actuator ~~structure~~ operating within a head position servo loop, the data transfer driver comprising:

5 one or more head interfaces, each head interface electrically connected to a transducer head for controlling the transducer head for data read and/or write operations;
and

10 a mode controller electrically connected to each head ~~interface~~ interface, for
controlling the operation of each head interface for selectively reading data from at least
one recording surface via at least one transducer head while writing data to a plurality of
recording surfaces via a plurality of transducer heads.

45. (Currently amended) A data transfer driver for a data storage device including
recording media having one or more recording surfaces, and a plurality of ~~data~~-transducer
heads positionable relative to the recording surfaces by an ~~a head position~~-actuator
~~structure~~ operating within a head position servo loop, the data transfer driver comprising:
5 a plurality of head interfaces, each head interface electrically connected to a
corresponding transducer head for controlling that transducer head for data read and/or
write operations; and

a mode controller electrically connected to each head ~~interface~~ interface, for
controlling the operation of each head interface based on configuration information for
10 selectively reading data from at least one recording surface while writing data to a
plurality of recording surfaces.

46. (Currently amended) The data transfer driver of claim 45, ~~45~~-wherein the
configuration information includes ~~transducer~~-head selection and data transfer mode
information.

47. (Currently amended) The data transfer driver of claim 45, ~~45~~-wherein each
head interface comprises:

a read circuit for controlling the corresponding transducer head to read data from
a recording surface; the data disk, and

5 a write circuit for controlling the corresponding transducer head to write data to a
recording surface; the data disk.

48. (Currently amended) The data transfer driver of claim 45, 45 wherein the
mode controller controls the operation of the head interfaces based on the configuration
information for writing data to a recording surface via a selected transducer head while
reading data from the recording surface via the selected ~~that same~~ transducer head.

49. (Currently amended) The data transfer driver of claim 45, 45 wherein the
mode controller controls the operation of the head interfaces based on the configuration
information for writing data to at least one recording surface via at least one transducer
head while reading data from at least one recording surface via at least another transducer
5 head.

50. (New) A data transfer driver for a disk drive including one or more magnetic
data disks having one or more recording surfaces, and one or more transducer heads
positionable relative to the recording surfaces by an actuator operating within a head
position servo loop, the data transfer driver comprising:

5 one or more head interfaces, each head interface electrically connected to a
transducer head for controlling the transducer head for data read and/or write operations;
and

10 a mode controller electrically connected to each head interface for controlling the operation of each head interface for selectively reading data from at least one recording surface via at least one transducer head for a distance longer than a servo sector while writing data to at least one recording surface via at least one transducer head.

51. (New) A disk drive comprising:

one or more data disks having one or more recording surfaces;

5 a reference disk having a reference pattern thereon, wherein the reference pattern comprises a servo clock providing transducer head circumferential relative position information, and servo position information providing transducer head radial relative position information;

one or more transducer heads;

an actuator for positioning the transducer heads relative to the recording surfaces, operating within a head position servo loop;

10 a preamplifier comprising:

one or more head interfaces, each head interface electrically connected to a transducer head for controlling the transducer head for data read and/or write operations; and

15 a mode controller electrically connected to each head interface for controlling the operation of each head interface based on configuration information for selectively reading data from at least one recording surface via at least one transducer head while writing data to at least another recording surface via at least one transducer head; and

a drive controller for controlling the actuator to position the transducer heads
20 relative to the recording surfaces, for providing the configuration information to the mode
controller for selectively reading data from at least one recording surface via at least one
transducer head while writing data to at least another recording surface via at least one
transducer head, for controlling the actuator and the preamplifier in a servo control loop,
for reading the reference pattern from the reference disk via a transducer head and for
25 using the read servo clock and servo position information to position and maintain one or
more other transducer heads on one or more recording surfaces while writing final servo
patterns onto one or more recording surfaces.

52. (New) The disk drive of claim 51, wherein the drive controller controls the
actuator and the preamplifier for:

reading the reference pattern from the reference disk via a transducer head and
using the read servo clock and servo position information to position and maintain one or
5 more other transducer heads on one or more recording surfaces;

while at the same time generating and writing final servo patterns onto one or
more recording surfaces.

53. (New) The disk drive of claim 51, wherein the drive controller further
comprises:

a pattern generator for generating the final servo patterns for writing to the
recording surfaces; and

5 a servo controller for controlling the actuator and the preamplifier in a servo control loop, for reading the reference pattern from the reference disk via a transducer head and for using the read servo clock and servo position information to position and maintain one or more other transducer heads on one or more recording surfaces while writing the final servo patterns onto one or more recording surfaces.

54. (New) The disk drive of claim 51, wherein the preamplifier is an integrated circuit.

55. (New) The disk drive of claim 51, wherein the preamplifier is an ASIC.

56. (New) The disk drive of claim 51, wherein the configuration information is a state signal sent to and stored in the preamplifier.

57. (New) The disk drive of claim 51, wherein the configuration information is a serial word sent to and stored in the preamplifier.

58. (New) The disk drive of claim 51, wherein the data disks are blank until writing the final servo patterns.

59. (New) The disk drive of claim 51, wherein the drive controller provides the configuration information to the mode controller for reading the final servo patterns from a recording surface via a transducer head and to position and maintain one or more other

transducer heads on the reference disk while writing final servo patterns onto the
5 reference disk.

60. (New) The disk drive of claim 59, wherein the final servo patterns overwrite
the reference pattern.

61. (New) A disk drive comprising:

first and second disk surfaces;

first and second heads, wherein the first head reads from and writes to the first
disk surface, and the second head reads from and writes to the second disk surface; and

5 a preamplifier that controls read and write operations for the heads based on
configuration information, wherein the configuration information provides head selection
and data transfer mode information that includes (1) a read mode in which each selected
head reads from a corresponding disk surface, (2) a write mode in which each selected
head writes to a corresponding disk surface, (3) a servo write mode in which each
10 selected head writes final servo patterns to a corresponding disk surface, and (4) a read-
while-write (RWW) mode in which each read selected head reads from a corresponding
disk surface while each write selected head writes to a corresponding disk surface.

62. (New) The disk drive of claim 61, wherein the disk surfaces are on a single
disk.

63. (New) The disk drive of claim 61, wherein the disk surfaces are on separate disks.

64. (New) The disk drive of claim 61, wherein the preamplifier is an integrated circuit.

65. (New) The disk drive of claim 61, wherein the preamplifier is an ASIC.

66. (New) The disk drive of claim 61, wherein the configuration information is a state signal sent to and stored in the preamplifier.

67. (New) The disk drive of claim 61, wherein the configuration information is a serial word sent to and stored in the preamplifier.

68. (New) The disk drive of claim 61, wherein the configuration information selects the RWW mode such that the first head reads longer than a servo sector from the first disk surface while the second head writes to the second disk surface.

69. (New) The disk drive of claim 61, wherein the configuration information selects the RWW mode such that the first head reads other than a servo sector from the first disk surface while the second head writes to the second disk surface.

70. (New) The disk drive of claim 61, wherein the configuration information selects the RWW mode such that the first head reads a temporary reference pattern from the first disk surface while the second head writes to the second disk surface.

71. (New) The disk drive of claim 61, wherein the configuration information selects the servo write mode and the RWW mode such that the disk drive self-servo writes as the first head reads from the first disk surface to position the first and second heads while the second head writes the final servo patterns to the second disk surface.

72. (New) The disk drive of claim 71, wherein the first head reads a reference pattern from the first disk surface to position the first and second heads while the second head writes the final servo patterns to the second disk surface.

73. (New) The disk drive of claim 72, wherein the reference pattern includes timing and position information.

74. (New) The disk drive of claim 72, wherein the reference pattern includes circumferential position information and radial position information.

75. (New) The disk drive of claim 72, wherein the reference pattern is a printed media pattern.

76. (New) The disk drive of claim 71, wherein the self-servo write is a bank write.

77. (New) The disk drive of claim 71, wherein the self-servo write is a stagger write.

78. (New) The disk drive of claim 71, wherein the self-servo write provides initial information on the second disk surface.

79. (New) The disk drive of claim 71, wherein the configuration information selects the servo write mode and the RWW mode after the second head writes the final servo patterns to the second disk surface such that the disk drive self-servo writes as the second head reads the final servo patterns from the second disk surface to position the first and second heads while the first head writes the final servo patterns to the first disk surface.

80. (New) The disk drive of claim 79, wherein the final servo patterns overwrite the reference pattern.

81. (New) A disk drive comprising:

first and second disk surfaces;

first and second heads, wherein the first head reads from and writes to the first disk surface, and the second head reads from and writes to the second disk surface;

5 a preamplifier that controls read and write operations for the heads based on configuration information, wherein the configuration information provides head selection and data transfer mode information that includes (1) a read mode in which each selected

head reads from a corresponding disk surface, (2) a write mode in which each selected head writes to a corresponding disk surface, and (3) a read-while-write (RWW) mode in which each read selected head reads from a corresponding disk surface while each write selected head writes to a corresponding disk surface; and

a drive controller that sends the configuration information to the preamplifier, wherein the drive controller sets the configuration information to (1) the read mode for read operations, (2) the write mode for write operations, and (3) the RWW mode for self-servo write such that the first head reads a reference pattern from the first disk surface to position the first and second heads while the second head writes final servo patterns to the second disk surface.

82. (New) The disk drive of claim 81, wherein the configuration information is a state signal sent to and stored in the preamplifier.

83. (New) The disk drive of claim 81, wherein the configuration information is a serial word sent to and stored in the preamplifier.

84. (New) The disk drive of claim 81, wherein the reference pattern includes timing and position information.

85. (New) The disk drive of claim 81, wherein the reference pattern includes circumferential position information and radial position information.

86. (New) The disk drive of claim 81, wherein the reference pattern is a printed media pattern.

87. (New) The disk drive of claim 81, wherein the reference pattern is a spin stand written pattern.

88. (New) The disk drive of claim 81, wherein the self-servo write provides initial information on the second disk surface.

89. (New) The disk drive of claim 81, wherein the drive controller sets the configuration information after the final servo patterns are written to the second disk surface to RWW mode for self-servo write such that the second head reads the final servo patterns from the second disk surface to position the first and second heads while the first
5 head writes the final servo patterns to the first disk surface.

90. (New) The disk drive of claim 89, wherein the final servo patterns overwrite the reference pattern.

91. (New) A disk drive comprising:
first and second disk surfaces;
first and second heads, wherein the first head reads from and writes to the first disk surface, and the second head reads from and writes to the second disk surface;

5 a preamplifier that controls read and write operations for the heads based on
configuration information, wherein the configuration information provides head selection
and data transfer mode information that includes (1) a read mode in which each selected
head reads from a corresponding disk surface, (2) a write mode in which each selected
head writes to a corresponding disk surface, and (3) a read-while-write (RWW) mode in
10 which each read selected head reads from a corresponding disk surface while each write
selected head writes to a corresponding disk surface; and

 a drive controller that sends the configuration information to the preamplifier,
wherein the drive controller sets the configuration information to (1) the read mode for
read operations, (2) the write mode for write operations, and (3) the RWW mode such
15 that the first head reads from the first disk surface for an entire revolution of the first disk
surface while the second head writes to the second disk surface for an entire revolution of
the second disk surface.

92. (New) The disk drive of claim 91, wherein the configuration information is a
state signal sent to and stored in the preamplifier.

93. (New) The disk drive of claim 91, wherein the configuration information is a
serial word sent to and stored in the preamplifier.

94. (New) The disk drive of claim 91, wherein the first head reads longer than a
servo sector from the first disk surface while the second head writes to the second disk
surface.

95. (New) The disk drive of claim 91, wherein the first head reads other than a servo sector from the first disk surface while the second head writes to the second disk surface.

96. (New) The disk drive of claim 91, wherein the first head reads from the first disk surface that is devoid of final servo patterns while the second head writes to the second disk surface.

97. (New) The disk drive of claim 91, wherein the first head reads from the first disk surface while the second head writes to the second disk surface to provide initial information on the second disk surface.

98. (New) The disk drive of claim 91, wherein the first head reads a reference pattern from the first disk surface that provides circumferential position information and radial position information to position the first and second heads while the second head writes to the second disk surface.

99. (New) The disk drive of claim 91, wherein the first head reads from the first disk surface while the second head writes final servo patterns to the second disk surface.

100. (New) The disk drive of claim 91, wherein the first head reads a reference pattern from the first disk surface that provides circumferential position information and

radial position information to position the first and second heads while the second head writes final servo patterns to the second disk surface.